

LEGISLATIVE REFERENCE LIBRARY  
GV199.42.M6 W3ax  
Minnesota. Dept. - A management plan for the Washburn



3 0307 00026 2116

A Management Plan  
for the

781365

# Washburn Lake Solitude Area and adjacent ski touring and hiking trail



STATE FOREST DAY USE SUB-AREA

Final Draft  
Sept. 1978

Minnesota Department  
of Natural Resources

# TABLE OF CONTENTS

	<u>Page</u>
Foreword-----	i
Summary-----	ii
I. <u>Introduction to the Plan</u>	
State Forest Multi Use Concept-----	1
Authority-----	3
Goals and Objectives-----	4
II. <u>Description of the Proposed Action</u>	
Purpose of the Action-----	7
Location of the Project-----	7
Magnitude of the Project-----	7
Unit Goal and Objectives-----	10
Existing Development-----	10
Proposed Development-----	12
Upgrading Existing Treadway-----	12
Parking Lot-----	12
Trailhead Area-----	17
Expanding Existing System-----	17
Bridges-----	18
Rest Areas-----	20
Signs-----	22
Maps-----	26
Maintenance-----	26
Steps Involved In the Planning Process-----	27
Implementation-----	29
Estimated Costs-----	30
Timing of the Project-----	31
Future Potential Expansion-----	31
Recreational Needs to be Served-----	31
III. <u>Description of the Environment</u>	
Topography-----	34
Soils-----	34
Climate-----	35
Water Resources-----	35
Mineral Resources-----	36
Vegetative Cover-----	36
Wildlife-----	36
Land and Timber Resources-----	37
Air and Water Quality-----	37
Historical and Archaeological Resources-----	38

	<u>Page</u>
Transportation and Utilities-----	39
Socio Economic Factors-----	40
Land Use and Development Trends-----	41
Facilities in Region 5-----	41
Facilities in the Forest-----	42
Management Programs Within the Forest-----	42
Potential Concerns and Considerations-----	44
 IV. <u>Environmental Impact on the Proposed Project</u>	
Impact on Physical and Biological Environment-----	46
Impact on Historical and Archaeological Resources-----	47
Impact on Transportation and Utilities-----	47
Impact on Socio Economic Factors-----	47
Impact on Land Use-----	48
Impact on Management of the Forest-----	48
 V. APPENDIX-----	49
 VI. BIBLIOGRAPHY-----	55
 VII. Draft Plan Review: Public Meeting-----	57

## FOREWORD

It is the purpose of this document to serve as both a management plan for the development and maintenance of the Washburn Lake Solitude Area and adjacent ski touring-hiking trail (day use sub-area), and as an environmental assessment of this action.<sup>1</sup> The development and maintenance procedures described in this document will insure that the scenic, historic, scientific, and recreational qualities of the trail are properly managed for the use and enjoyment of the citizens of Minnesota. The environmental impacts of this action have also been assessed to measure their effects on the environment. This assessment may be used in the event that the Department of Natural Resources - Division of Forestry decides to seek Land and Water Conservation Funding (LAWCON).

---

<sup>1</sup>It should be clarified at this point, that an existing trail system has already been developed within the Washburn Lake Solitude Area while an expansion trail system outside of this area will be developed. Local conditions would not lend itself to expanding the boundaries of this solitude area. However, local conditions would lend itself to additional non-motorized trail mileage in the Land O' Lakes State Forest.

## SUMMARY

The major sections of the document are: the Introduction, Description of the Proposed Action, Description of the Environment, and Environmental Impact of the Proposed Project.

The Introduction includes: an overview of pertinent legislation, the authority for state forest sub areas, and the goal and objectives for the state forest ski touring-hiking program. The DNR's overall goal is also revealed.

The Description of the Proposed Action reveals: the location of the project, the unit goal and objectives, existing and proposed development, maintenance, how the plan will be implemented, and whose recreational needs will be served.

The Description of the Environment is an inventory-analysis of the natural and socio-economic resources of the project area. This section attempts to "tie together" the interrelated resource factors that are vital in the planning of this unit.

The final section, the Environmental Impacts of the Proposed Project, deals with the possible affects that the proposed action may incur.

The Washburn Lake Solitude Area and adjacent ski touring and hiking trail management plan will be filed with and be available from Documents Section, Room 140, Centennial Building, St. Paul, Minnesota 55155.

## Introduction to the Plan

### Multiple Use Concept

It is the policy of the Department of Natural Resources, Division of Forestry, to protect, develop, and administer the renewable resources of Minnesota's fifty-six State Forests so they are utilized in the combination of uses that will best meet the needs of Minnesota citizens. This requires harmonious and coordinated management of the forest resources to bring about their maximum productivity as well as providing other public benefits.

The primary management objective is to maintain a maximum sustained yield of various forest products while utilizing renewable forest resources to benefit the greatest number of people. Renewable forest resources that require management and protection include timber, wildlife, soil, and water. Management practices such as timber production and harvest, watershed protection, wildlife habitat maintenance, and recreational development are carried out on lands best suited for each use.

This multiple use approach to management is intended to provide equal opportunity for all citizens to enjoy and utilize our forest resources. This means that the forest is a shared resource that must be utilized by various user groups in harmony with each other.

With this multiple use concept in mind, the legislature included state forests in Minnesota's Outdoor Recreation System. This system, created in 1975 by the Outdoor Recreation ACT (ORA), incorporated all state recreation lands into eleven different kinds of areas each with its own classification. The 11 classifications are: Natural State Parks; Recreational State Parks; State Trails; Scientific and Natural Areas; State Wilderness Areas; State Forests; State Wildlife Management Areas; State Water Access Sites; State Wild, Scenic and Recreational Rivers; State Historic Sites; and State Rest Areas. Each member of the system is referred to as a "unit".

By passing the ORA, the legislature revealed its awareness of a growing problem in Minnesota: The increasing number of people using state lands each year for more diverse forms of recreation. While some areas could withstand higher levels of use, other areas experienced overcrowding and conflicts between different recreational users.

To insure that the administration of each unit is managed in a manner that is consistent with the purposes for which the unit was authorized, it is required by the ORA that the managing agency prepare a master plan for each unit. The act states:

"No construction of new facilities or other development of an authorized unit, other than repairs and maintenance, shall commence until the managing agency has prepared and submitted to the state planning agency and the state planning agency has reviewed, pursuant



to this section, a master plan for administration of the unit in conformity with this section. This requirement shall not apply to an existing unit until August 1, 1977."

The following day use sub-area plan has been prepared by the DNR to fulfill the requirements of this act as it pertains to state forests. This day use sub-area plan will be incorporated into the overall state forest master plan when that plan is prepared.

This day use sub-area plan has been written prior to the overall state forest master plan so that monies from the Outdoor Recreation Bonding Bill can be utilized this year (Laws 1977, Chapter 421, Section 13, Subdivision 4).

Under the terms of this bill, the DNR has been allocated \$1,105,000:

"For betterment of public land and improvements needed for trails for skiing, hiking and bicycling within state parks and recreation areas as listed and described in sections 85.012 and 85.013 and state Forests, as listed and described in section 89.021."

#### The Authority

The authority for establishment of these ski touring-hiking areas (day use sub-areas) was granted by Minnesota Statutes 86.01 (the Outdoor Recreation Act) subdivision 7 which states:



"Subd. 7. STATE FORESTS AND STATE FOREST SUB-AREAS; PURPOSE; RESOURCE AND SITE QUALIFICATIONS; ADMINISTRATION. (a) A state forest, as established by Minnesota Statutes, Section 89.021, shall be administered to accomplish the purposes set forth in that section, and a state forest sub-area shall be established to permit development and management of specialized outdoor recreation at locations and in a manner consistent with the primary purpose of the forest.

(b) No unit shall be authorized as a state forest sub-area unless it is located within a state forest and contains suitable natural resources to accommodate any of the following uses:

(1) Day use areas. Areas which permit recreational use of the forest in its natural state, not requiring an overnight stay, including but not limited to picnicking, fishing, swimming, boat launching, hiking, interpretation, and nature observation.

(2) Campground. Provide minimum facilities to accommodate overnight camping.

(c) Outdoor recreation sub-areas located within state forests shall be administered by the commissioner of natural resources in a manner which is consistent with the purposes of this sub-division.

#### Goals and Objectives

The statutes and laws previously cited outline the legislation pertaining to

state forest ski touring and hiking trails in regard to funding, planning, and establishment. Along with this legislation, it is important to establish a goal for the overall State Forest Ski Touring and Hiking Program.

#### State Forest Ski Touring and Hiking Program Goal

The goal of the state forest ski touring and hiking program is to provide Minnesotans with the highest possible variety of quality ski touring and hiking areas. These ski touring and hiking trails shall be developed so that they may be enjoyed for years to come.

However, since state forest ski touring-hiking trails are only a part of the program, it is equally important to recognize the overall DNR ski touring-hiking program goal.

#### Overall Program Goal

The goal of the overall DNR Ski Touring and Hiking Program (which includes Natural and Recreational State Parks, Recreation Areas, and State Forests), is to provide Minnesotans with the finest ski touring and hiking areas in the nation.

#### Objectives for Overall State Forest Ski Touring-Hiking Program

- \* To provide ski touring-hiking opportunities in state forests which are accessible to all citizens of Minnesota.

- \* To improve the 64 miles of existing ski touring-hiking trails in state forests throughout Minnesota.
- \* To develop 150 miles of new or additional ski touring-hiking trails where feasible in state forests throughout Minnesota.
- \* To provide a variety of ski touring-hiking experiences in state forests taking advantage of scenic, topographic, historic and recreational areas.
- \* To provide complementary facilities along each state forest ski touring-hiking trail to insure the rest and comfort of the trail user.
- \* To implement a system of signing design and specifications that are consistent along each state forest ski touring-hiking trail which promotes user enjoyment and safety.
- \* To disseminate current, accurate literature of each state forest ski touring-hiking trail for public information and use.
- \* To provide interpretation on the cultural, historic and vegetative features along state forest ski touring-hiking trails.
- \* To involve the governor's appointed ski touring task force and other concerned citizens in the planning and design of trails.

## Description of the Proposed Action

### Purpose of the Action

It is the Department of Natural Resources' intention to upgrade the Washburn Lake Solitude Area's 14 miles of existing trail loops and facilities, along with providing an additional 5-10 miles of ski touring-hiking trail. The purpose of this action is to provide the citizens of Minnesota with a safe, high quality trail system in the Land O' Lakes State Forest. This upgrading and expansion will be a cooperative project of Cass County and the Division of Forestry.

### Location of the Project

The Washburn Lake Solitude Area is located in the Land O' Lakes State Forest, two miles northwest of Outing, Minnesota (see location map in figure 1). It is within an hour's drive of Grand Rapids and Brainerd, and within a three hour drive of the Twin Cities Metropolitan area. The trail is located to the east and south of Washburn Lake (see county map in figure 2).

### Magnitude of the Project

It is the goal of the Department of Natural Resources to upgrade, develop, and maintain a trail system in the Washburn Lake Area which will provide the highest quality ski touring-hiking experience possible.



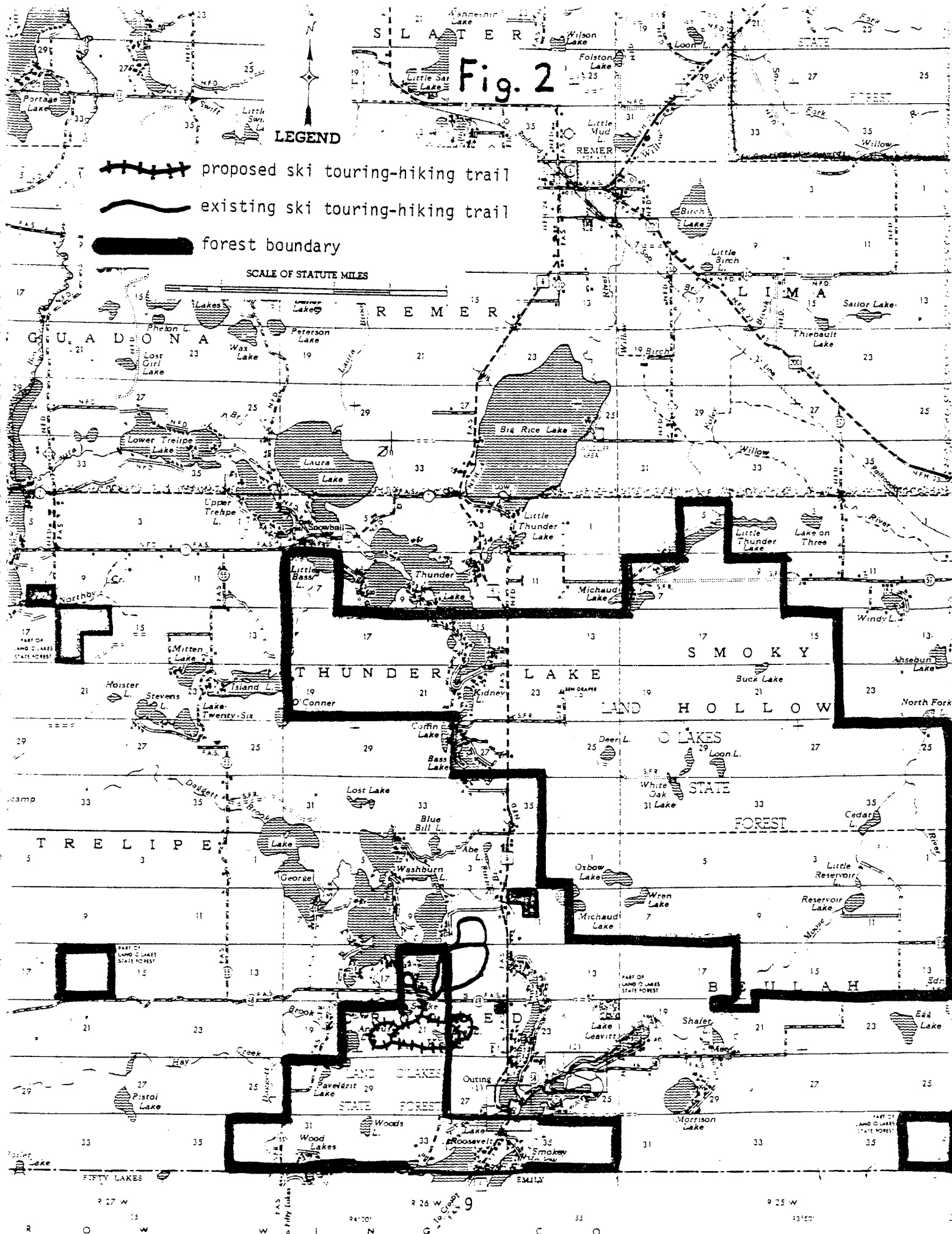
S L A T E R

Fig. 2

LEGEND

- proposed ski touring-hiking trail
- existing ski touring-hiking trail
- forest boundary

SCALE OF STATUTE MILES



## Objectives

- \* To upgrade and expand existing mileage in light of other on-going management practices.
- \* To gain approval of this plan for the development and management of this day use area.
- \* To complete the development as spelled out in this plan by the winter of 1978-79 (i.e. 5-10 miles of new ski touring-hiking trail plus upgrading of existing facilities).
- \* To further establish these trails for non-motorized recreational use through formal designation as a state forest day use sub-area for ski touring-hiking.<sup>2</sup>
- \* To develop and implement a maintenance program for a quality trail experience.

## Existing Development

Existing development includes 14 miles of loop trail, two rest areas with shelters and fire rings, and a parking area for 15 cars. The Washburn Lake campground with 30 campsites and seven picnic sites is also located in the area (see map in figure 3).

---

<sup>2</sup>Motorized vehicles for administrative purposes and contract services will be allowed.





### Proposed Development

The following action is proposed for the further development of the Washburn Lake Solitude Area and adjacent ski touring-hiking trail.

### Upgrading Existing Treadway

Since most of the existing ski touring-hiking trail within the Washburn Lake Solitude Area is already established with quality design and alignment, it will require very little upgrading. The present trail treadway has been developed for safe, enjoyable, two-way traffic with adequate run-outs, turning space, etc. (see design typical in figure 4). The only improvement made will be to widen or reroute the small loop around Margaret Lake. In addition, improvement of the complementary facilities along the rest of the existing trail will be made. The developments are as follows:

### Parking Lot

A new parking lot will be constructed east of the Washburn Lake Campground on the north side of County Road #48 (see map in figure 5). This lot will be built because: 1) The new lot will provide better access for summer use (otherwise the trail user would have to walk through swampland to get to the summer trail), and 2), after the proposed area of expansion is developed, the lot will be centrally located between the two loop systems. This lot will be surfaced with class V gravel and designed to hold 20-30 cars (see typical in figure 6). The gravel surfacing will make the parking lot more durable while aiding the drainage of excess water. Two pit toilets will also be constructed near the parking lot (see figure 7, page 16).

Fig.4

## Ski Touring Trail Treadways

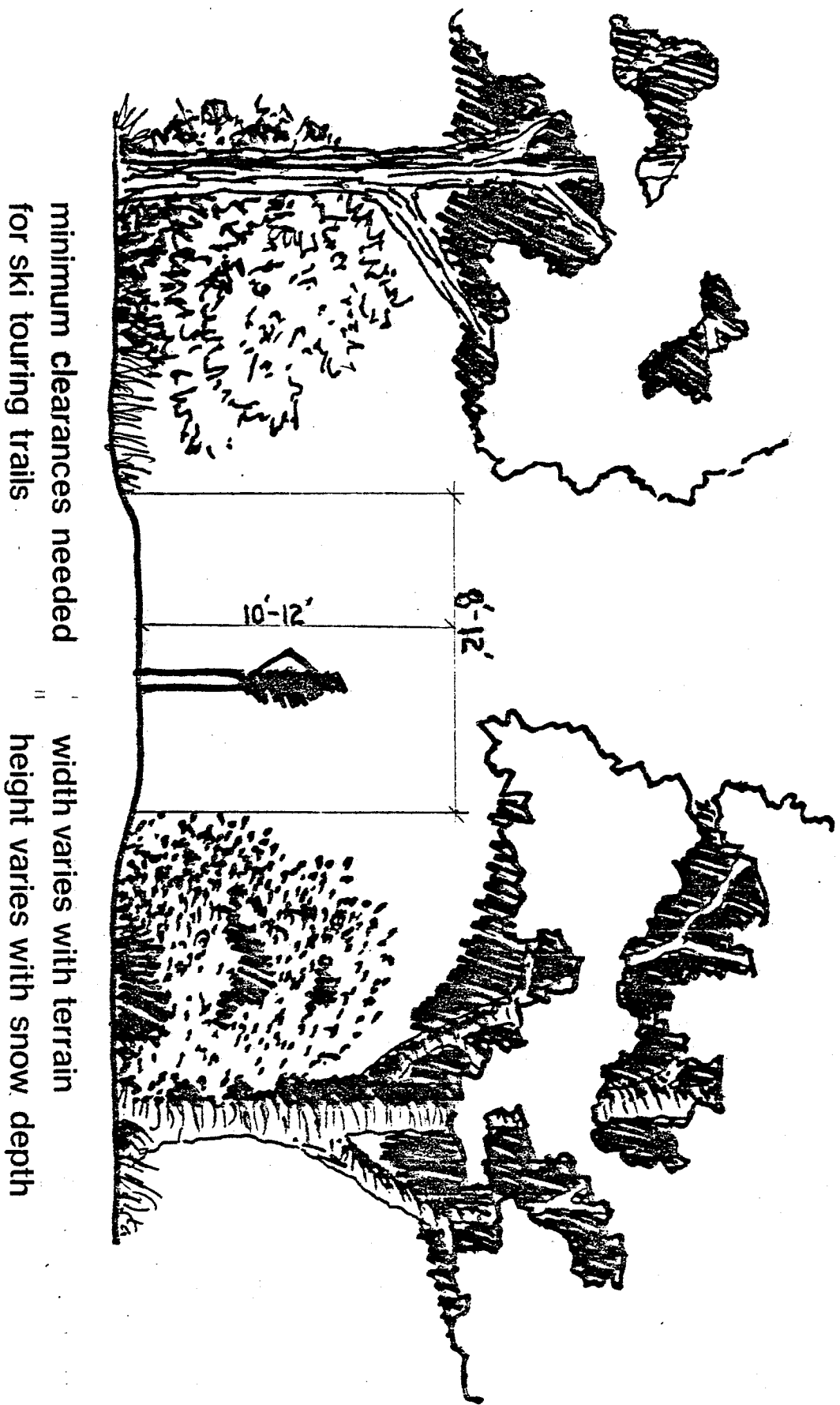
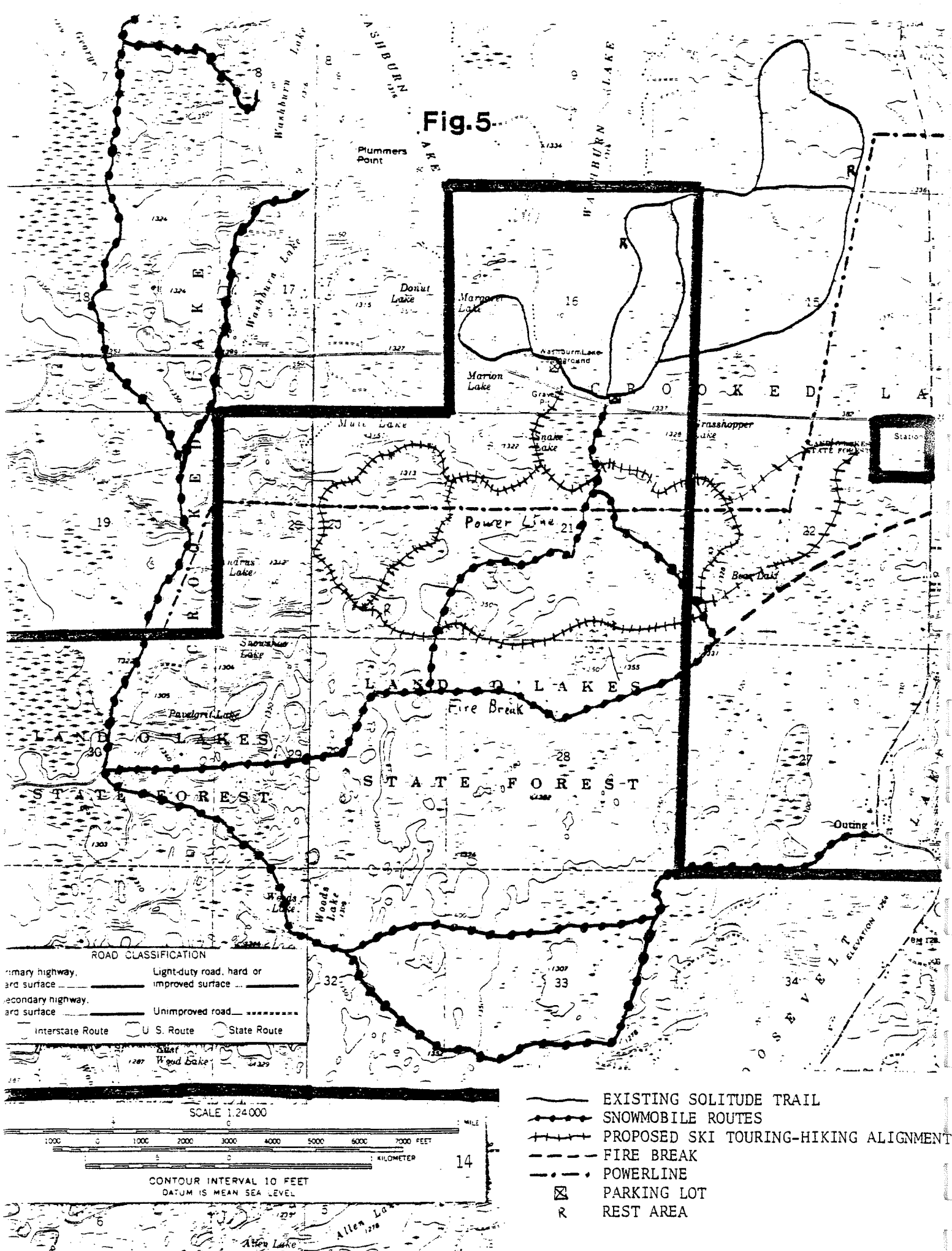


Fig.5



# PARKING LOT TYPICAL

PLAN VIEW

Fig. 6

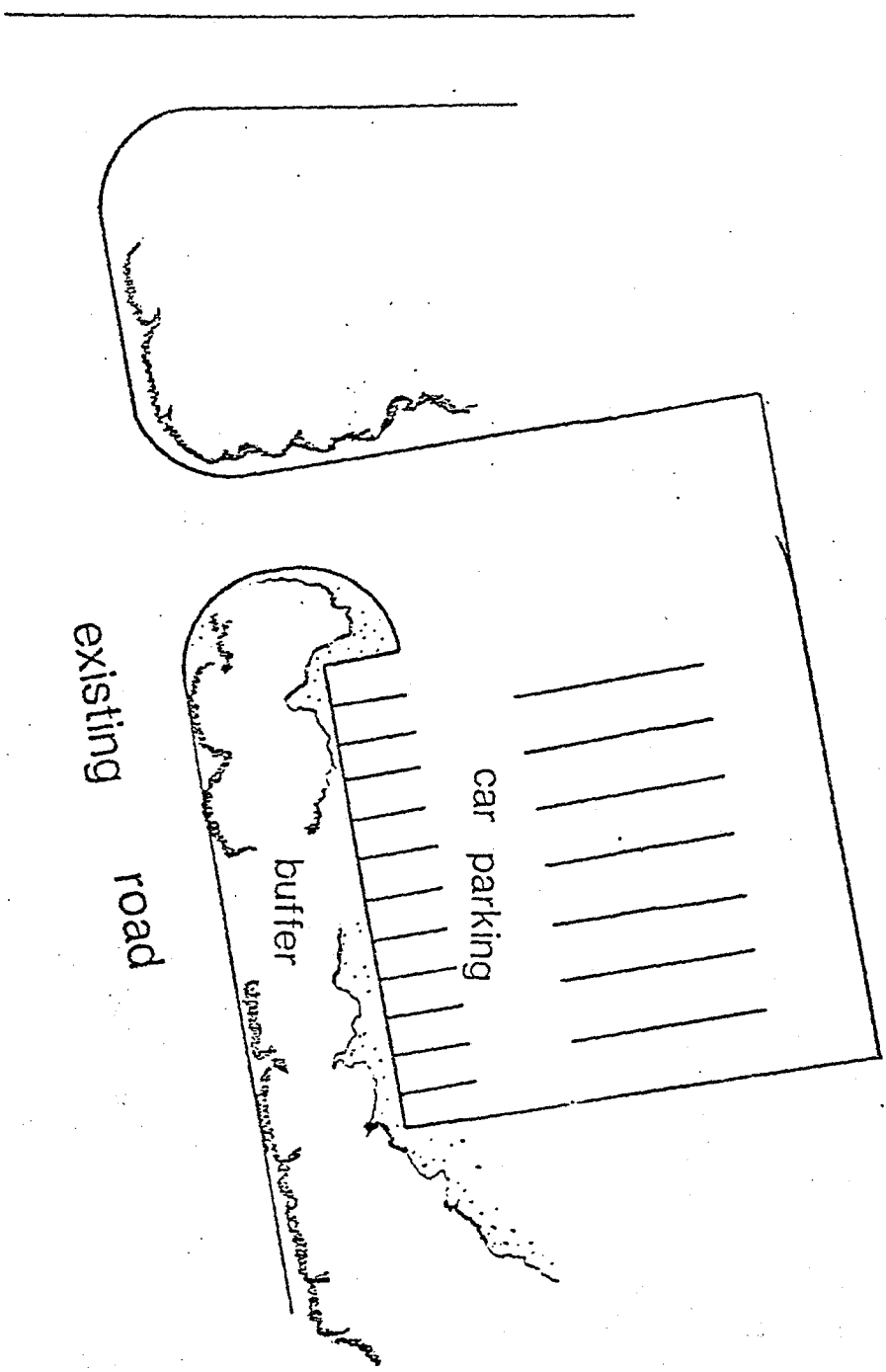
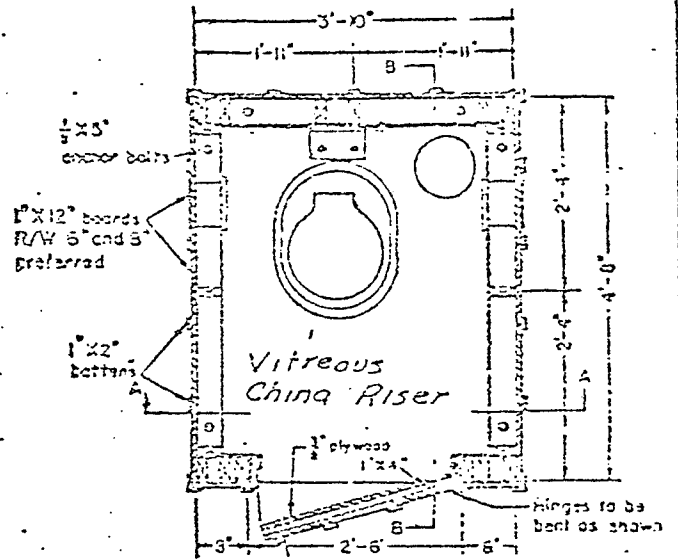
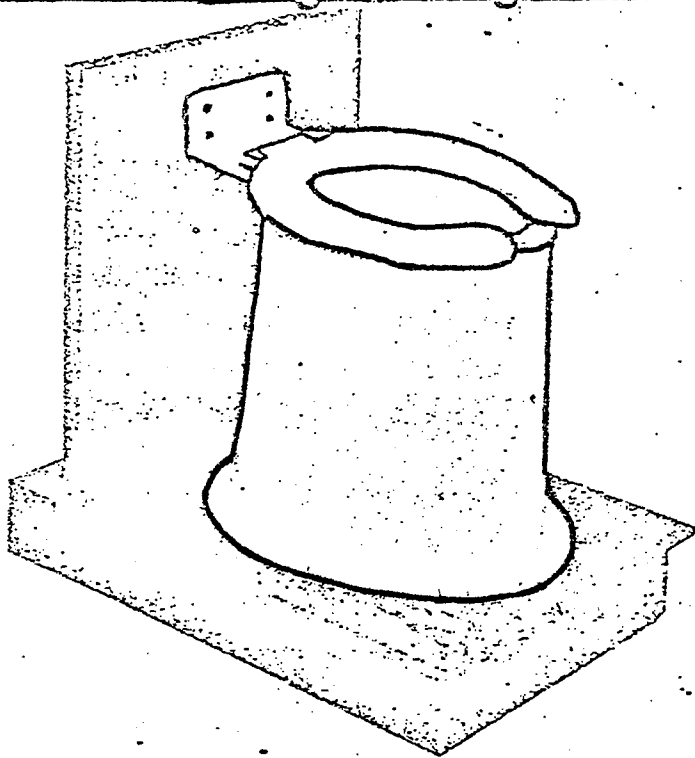


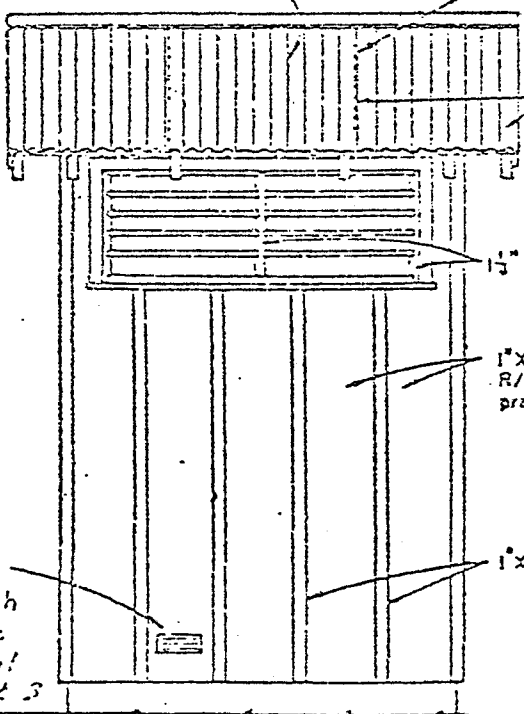
Fig.7 Single Seat Pit Toilet



PLAN

1/2" x 2 1/2" corrugated translucent fiber glass roofing corrugul or equal. Install in accordance with manufacturer's instructions.

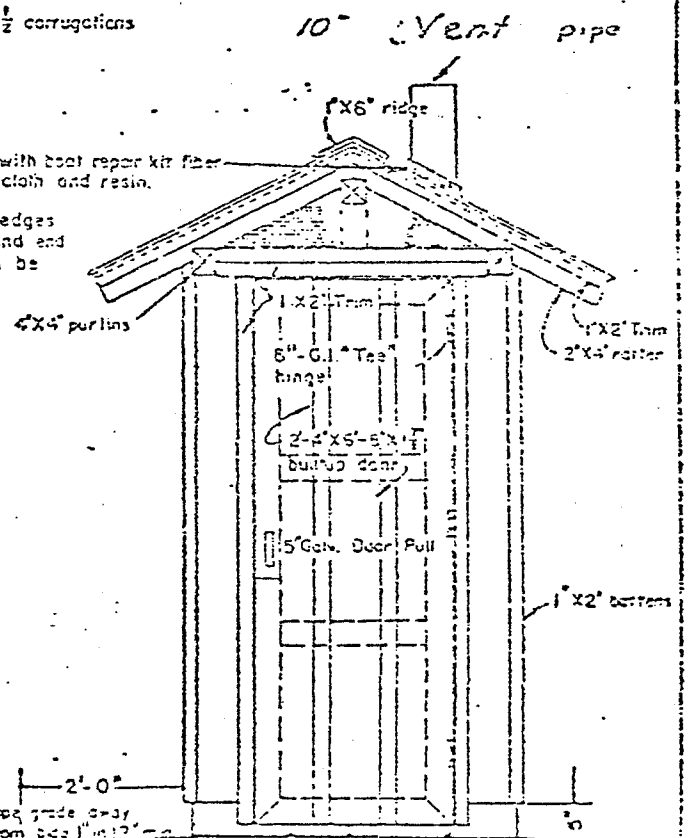
Lap a min. of 1 1/2 corrugations when joining.



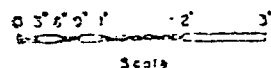
SIDE ELEVATION  
(OPPOSITE SIDE SIMILAR)

Flash with boot repair kit fiber glass cloth and resin.

Roof panel edges at overlap and end of roof shall be down.



FRONT ELEVATION



### Trailhead Area

A trailhead sign will be erected at a strategic point near the parking area. This wood routed sign will show the entire layout of the trail system. Along with this sign will be a bulletin board for posting emergency phone numbers, trail rules and regulations, and other information pertinent to the trail (see typical in figure 10, page 24).

### Expanding Existing System

To further enhance the ski touring-hiking opportunities in this area, the existing Washburn Lake Solitude Area trail mileage will be expanded. This new trail mileage is located on the south side of County Road #48 (see map in figure 5). This area has a sufficient amount of state and county lands to readily accommodate a ski touring-hiking trail. Amidst the large amount of public lands in the Land O' Lakes State Forest are parcels of private land. Some of these landowners have been or will be contacted about acquiring easements for trail purposes. If an easement cannot be obtained, the trail will be routed to avoid these parcels.

Snowmobiles presently use the power line right-of-way and other non-designated trails in this portion of the forest. The routes of heavy local snowmobile use were determined by contacting the local snowmobile club. These routes are shown in figure 5. By identifying these routes, the new ski touring-hiking trail will be routed to avoid conflicts with other users. The proposed ski touring-hiking trail will cross these snowmobile routes at least



three times, but it is felt that with the multiple use concept of the forest, different users will in some cases have to share an area. This type of sharing will provide opportunities for skiing and hiking while still providing for snowmobile use.

The development of this additional mileage will proceed according to the construction guidelines in the appendix (see page 49). These guidelines take into account alignment, cutting and brushing, bulldozing and seeding, erosion control, corduroying, and culverts. It should be mentioned that one of the loops near the new parking lot may be developed with the handicapped in mind. The route will be chosen so as not to exclude a handicapped person from access if he or she desires it.

### Bridges

At the present time, there are no bridge sites identified for either the existing trail within the Washburn Lake Solitude Area or adjacent ski touring-hiking trail. A bridge site may be identified in the expansion area after development begins. Bridge designs will be determined by the unit manager with the help of the Bureau of Engineering. Bridges should be made of natural materials so as to blend in with the natural setting of the area (see figure 8). Permits will be required from the Division of Waters before any bridge work can begin.

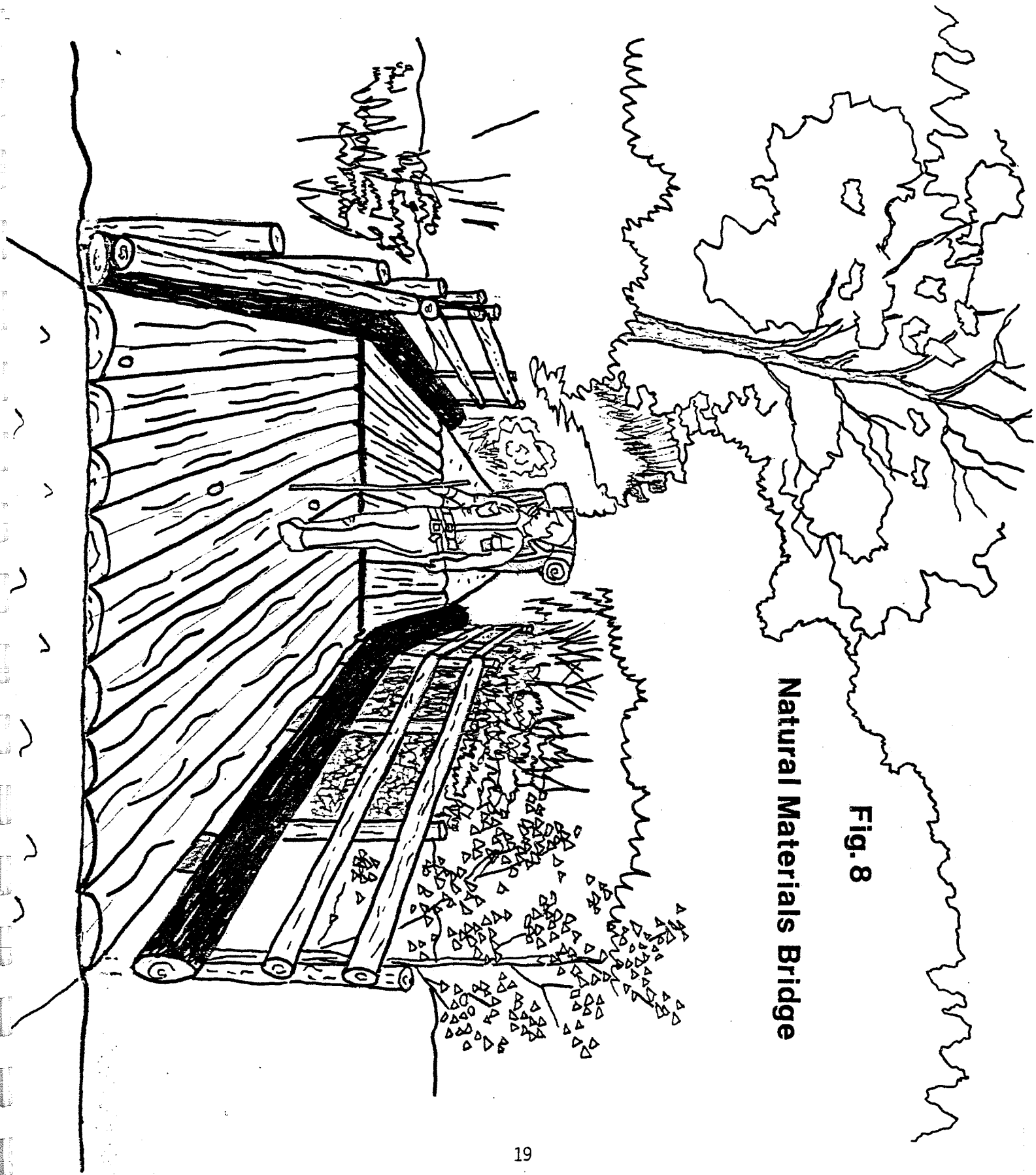


Fig. 8

Natural Materials Bridge

### Rest Areas

Two rest areas with adirondack shelters exist along the present Washburn Lake Solitude trail system (see typical in figure 9). One will be relocated and upgraded while the other one will only be upgraded. No additional rest areas will be needed on the existing trail system.

The rest area located at the existing parking lot will be relocated into the interior of the existing trail system. It is proposed that it be moved to the scenic overlook site as shown on the map in figure 3, page 11. Either a firering or fireplace<sup>3</sup> will be provided. Pit toilets may be added at a later date, if necessary.

The other rest area will remain where it currently is located (see map in figure 3, page 11).

The shelters at both rest areas will need some work. Spaces between the logs need proper chinking and banking with natural materials to prevent wind drafts.

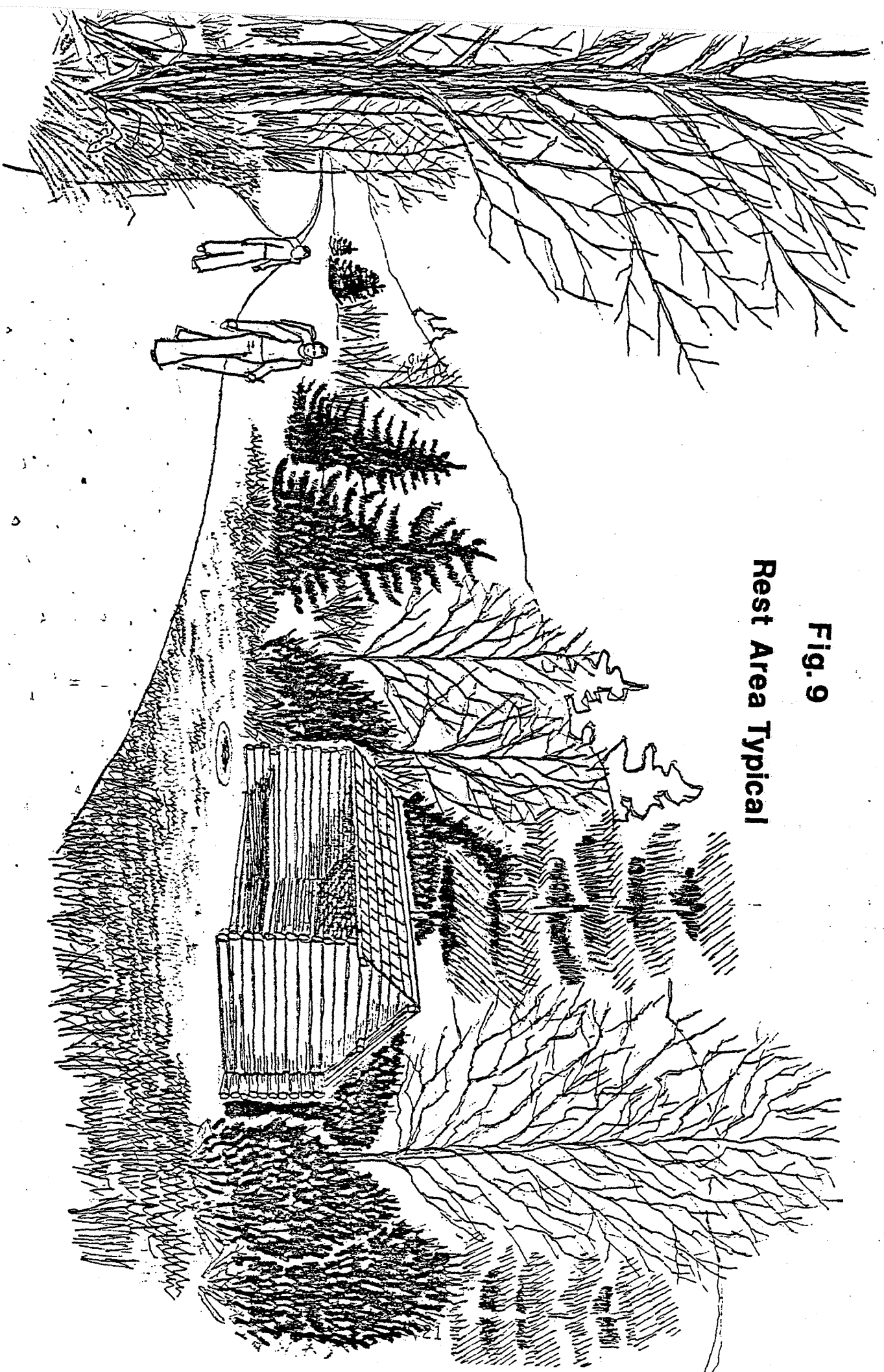
The shelters should be located a short distance off the trail right-of-way and will be placed in a manner so as to block the prevailing wind (i.e., placed so opening is not vulnerable to major wind gusts).

Two rest areas have been proposed for the expansion area. The new trail shelters will be constructed according to the Bureau of Engineering standards with

---

<sup>3</sup>It has been shown very successful to build specially designed fireplaces that reflect heat more efficiently into the shelters. This has generally been the project of YCC groups.

**Fig. 9**  
**Rest Area Typical**



some slight modifications. First of all, they will be deeper to allow use by larger groups. Second, creosoted logs will be used only for the bottom three rows to prevent wood-rot near the ground. Redwood stained logs will be used for the remainder of the shelter to maintain a pleasant looking structure. The general location of proposed rest areas are shown on the map in figure 5, page 14.

It was found through public hearing that frequent benches along the trail would help insure the rest and comfort of the user. These benches will be made of natural materials and will be placed in scenic locations along the trail (see figure 9.5).

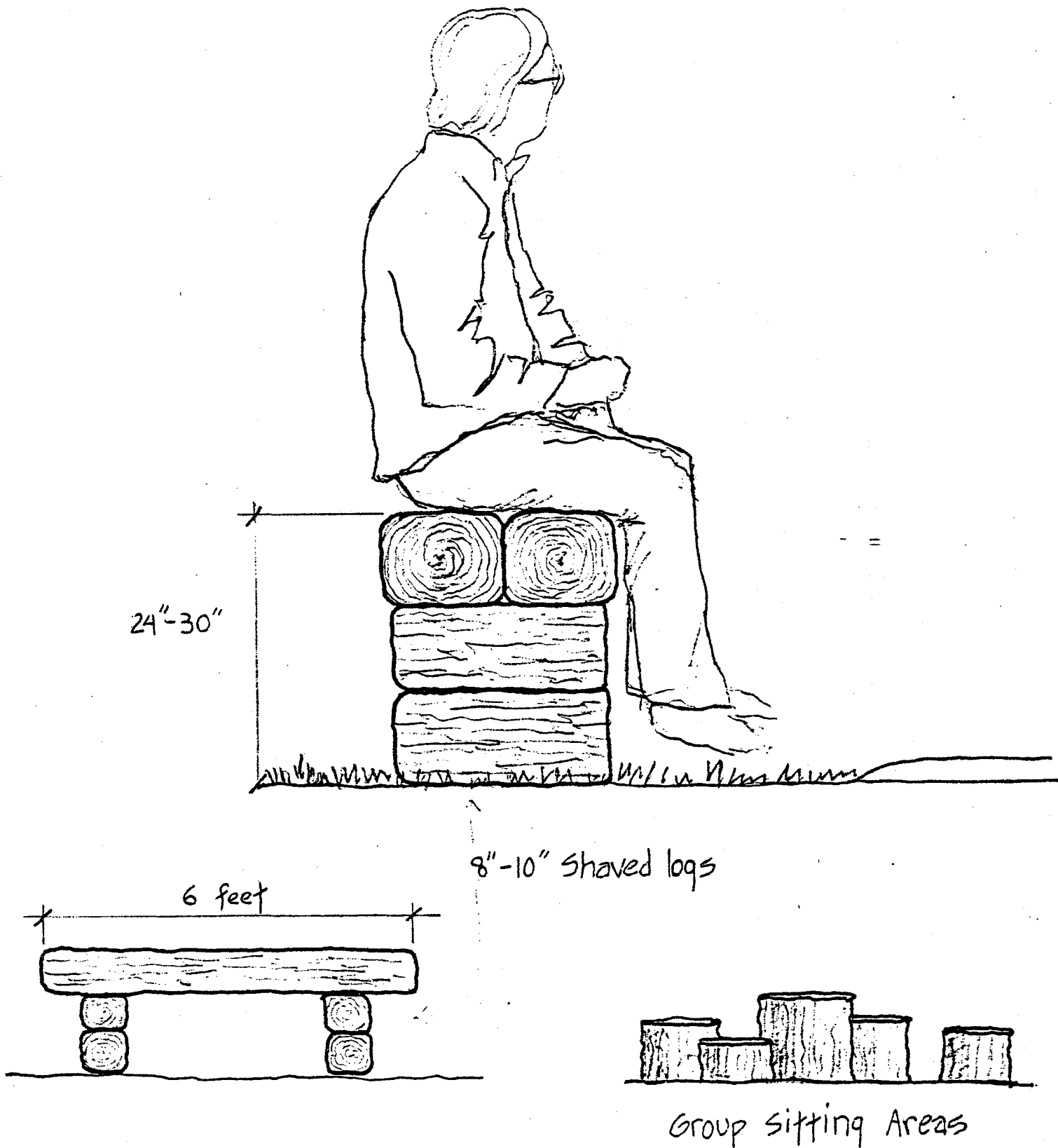
### Signs

The trail signing system will conform to the State's Standard System when that system has been finalized. The purpose of this signing system is to provide uniform symbols to convey information and direction for the trail user. Sufficient signs will be provided to transmit information, insure user safety, and facilitate enforcement. Signs will be located for maximum visibility and will be kept to a necessary minimum.

Two major types of signs installed will be "You are Here" maps and trail difficulty markers. The former will be located at all trail junctions while the latter will be placed at strategic points (see sign typicals in figures 10 and 11). Interpretive signs identifying tree species, management techniques, and other special features should also be placed in appropriate locations.

Fig. 9.5

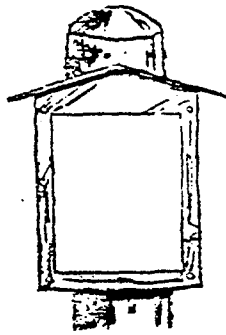
# Simple Log Bench



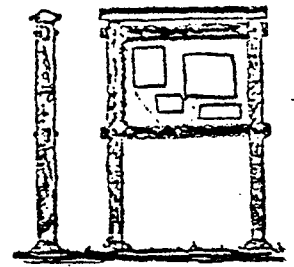
## Fig.10 Sign Typicals



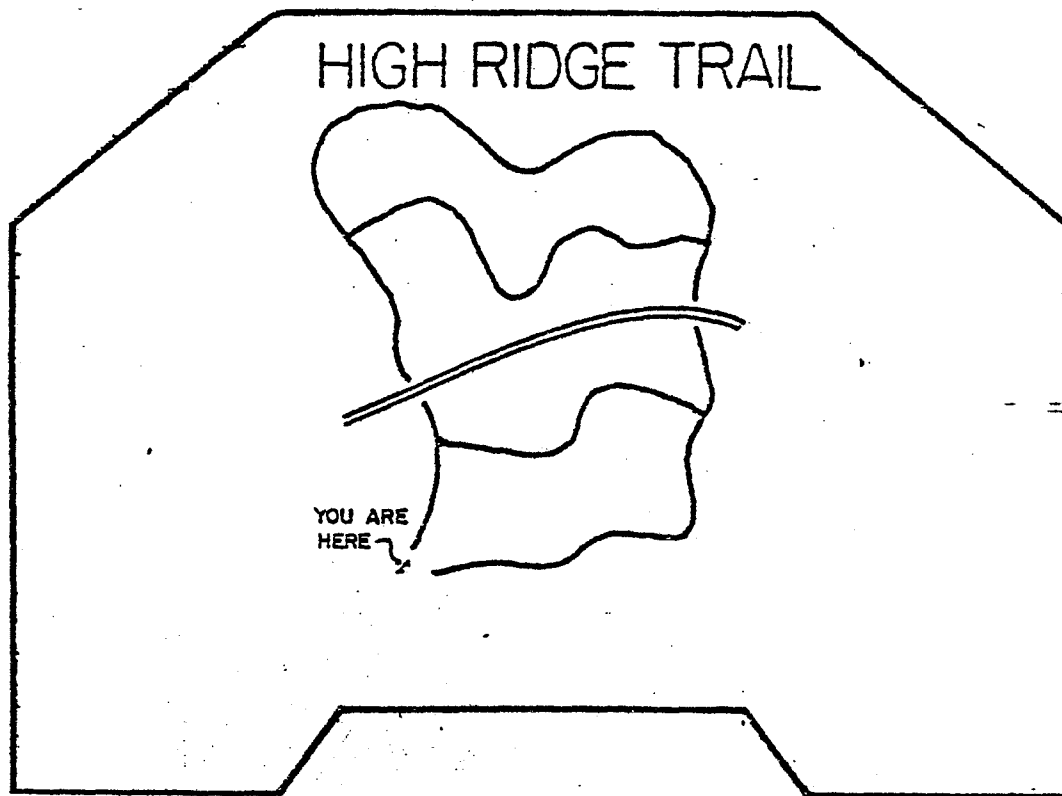
**Entrance Sign**



**"You are Here"  
Sign**



**Information  
Bulletin Board**



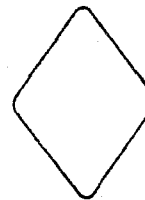
**Trailhead Sign**



**Skier**



**Hiker**



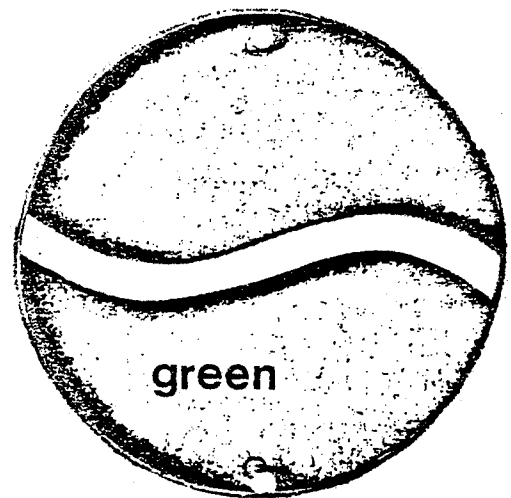
**Blazer**



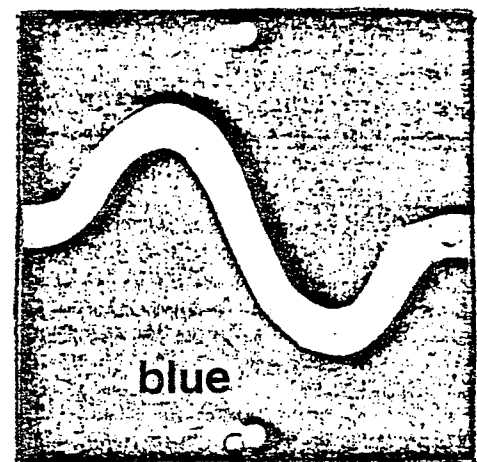
Fig. 11

# Trail Difficulty Symbols

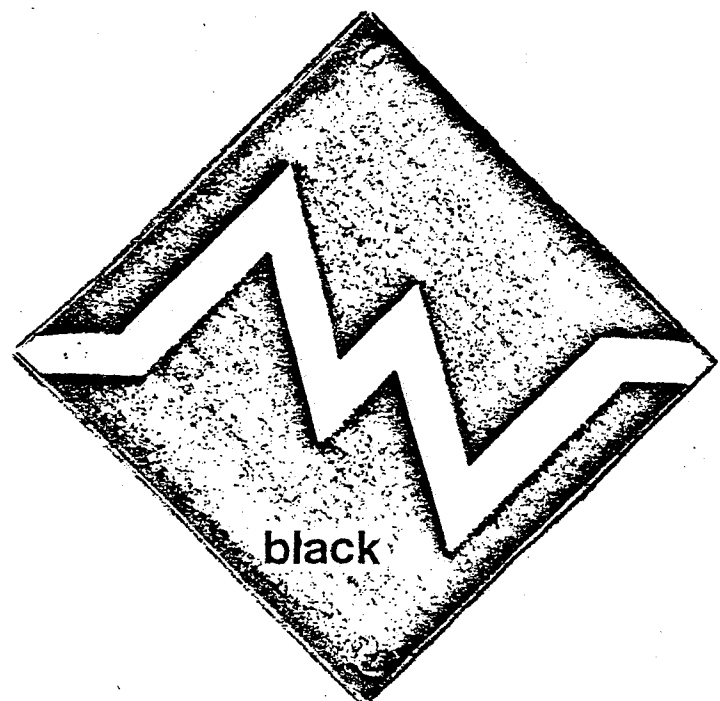
**easy**



**more difficult**



**most difficult**



### Maps

A user map is extremely important and will be available from a box near the trailhead sign. They will also be available from DNR Forestry offices and the Division of Parks and Recreation in St. Paul. The present Washburn Lake Solitude Area map will be upgraded for accuracy and information. The new map should show the location of the Land O' Lakes State Forest in the state, an accurate route for access, old and new trail mileage, trail direction, and complementary facilities such as campgrounds, rest areas, and parking lots. Also included should be interpretive information about the history, development, and management of the forest. The Division of Parks and Recreation will be responsible for development and printing of trail maps. The Division of Forestry and Trail Project Planning will have input as to their layout and design.

### Maintenance

Maintenance of the Washburn Lake Solitude Area and adjacent ski touring-hiking trail after development is the most important tool for sustaining its quality. Therefore, maintenance monies are essential if the area is to become a quality ski touring and hiking area.

At present, there are no funds earmarked for maintenance of ski touring and hiking trails developed through the bonding bill program. Therefore, it is a recommendation of this plan that maintenance money be made available through legislation to insure the quality of this unit.

Maintenance of the Washburn Lake Solitude Area and adjacent ski touring-hiking trail will require a year-around program. Routine maintenance will include litter pick-up, cleaning shelters and toilets, stacking firewood, and clearing surface vegetation. Major maintenance will involve removal of wind-falls, painting and repairing of structures, sign replacement, and controlling erosion where necessary.

Winter grooming of ski treadway will be done on a contract basis or by state employees using DNR equipment. No equipment is available for state use at this time. Therefore, if a contractor cannot be found to groom the treadway, suitable equipment will have to be purchased. Winter grooming will be set up on a flexible schedule to allow for periods of high and low use.

Periodic inspections will be made throughout the year to evaluate maintenance problems and actions needed. Inspections may be made by the district forester or his designate (i.e. maintenance foreman or by the person in charge of trail grooming). The regional trails coordinator and St. Paul staff may also inspect the trail if necessary.

#### Steps Involved in the Planning Process

1. Project proposal is initiated by district forester and is submitted through the area and regional foresters (at this time, the proposal is evaluated for worthiness and the potential for public support).

2. After proven feasible and consistent with the state forest multi-use concept, the proposal is sent to St. Paul.
3. Proposal is then investigated by the Bureau of Planning and Research with the input of the regional trails coordinator, area and district foresters, and other involved divisions.
4. Area of study is defined and a preliminary plan is prepared based on this study. Regional trails coordinator, and the area and district foresters perform necessary "groundwork" and report information to Trail Project Planning staff. Input is also received from various levels of government, special interest groups and others.
5. Preliminary plan is sent out to DNR divisions involved for review.
6. Plan is revised subject to this input and printed for public hearing.
7. A public hearing is held in the local area of the unit.
8. Plan is revised again taking into account public, departmental, and other agency review.
9. Plan is submitted to State Planning Agency for review for consistency with the Outdoor Recreation Act of 1975.

10. Possible revision subject to State Planning Agency review.
11. Final Review by State Planning Agency.
12. Implementation of plan by Division of Forestry and regional trail coordinator.

Note: Planning is an on-going process which does not stop after final State Planning Agency review. The management plan's built-in flexibility allows for site specific decision at the time of development. After development is completed, periodic reevaluation of the management program is required for response to changing conditions.

#### Implementation

The structure of the Department of Natural Resources is such that the Bureau of Planning and Research - Trail Project Planning is responsible for the planning process and general implementation monitoring. After the plan is reviewed for the last time by the State Planning Agency, trail development can begin.

The Division of Parks and Recreation - Trails Section, has the responsibility for funding the project. They are also responsible for monitoring development and maintenance to insure that funds are spent in compliance with the bonding bill and master plan.

The Division of Forestry implements the plan, and along with the regional staff, is responsible for the development and maintenance of the trail.

The regional trail coordinator will coordinate other managers' activities within the region. He will also coordinate the design and layout of the trails and facilities. The final alignment decisions will be made by the unit manager taking into account other on-going forest management practices. Actual construction and maintenance of the trails will also be the primary responsibility of the local unit manager.

All major changes in the management plan must be cleared through the Bureau of Planning and Research - Trail Project Planning.

#### Estimated Cost of Development

Maps	\$ 500
Shelter	\$ 500
Parking Lot	\$4,000
Pit Toilets	\$2,000
Signing	\$ 500
Bulldozing (\$40/hr. x 70 hrs.) =	\$2,800
Supplies, Labor, Other Equipment	\$6,000
<u>Repairs, and other Miscellaneous</u>	<u>\$ 500</u>
Total Estimated Cost	\$16,800

#### Maintenance Costs

Maintenance costs will be determined by the district forester, area forester and regional trails coordinator. A rough estimate of maintenance cost is \$2,000/year.

### Timing of the Project

Sixteen state forest ski touring and hiking trails have been identified as priority projects for development or improvement during 1978. The trail within the Washburn Lake Solitude Area is one of these projects.

The proposed developments are scheduled to be constructed during the summer and fall of 1978 so that they will be ready for use in the winter of 1978-79.

The trail will be monitored continually by the district forester and other personnel to assess any problems that have occurred and to determine any additional developments which may be necessary.

### Future Potential Development

After the proposed development as spelled out in this plan is complete, the Washburn Lake Solitude Area and adjacent ski touring-hiking trail will provide sufficient ski touring-hiking mileage. It has been determined through public input that a loop system providing 15 to 20 miles of trail is adequate for a worthwhile ski touring-hiking facility. Any further expansion of this system may have an adverse effect on timber management, which is one of the primary purposes of the Land O' Lakes State Forest.

### Recreational Needs to be Served by the Project

Ski touring and hiking are two activities that have experienced a tremendous

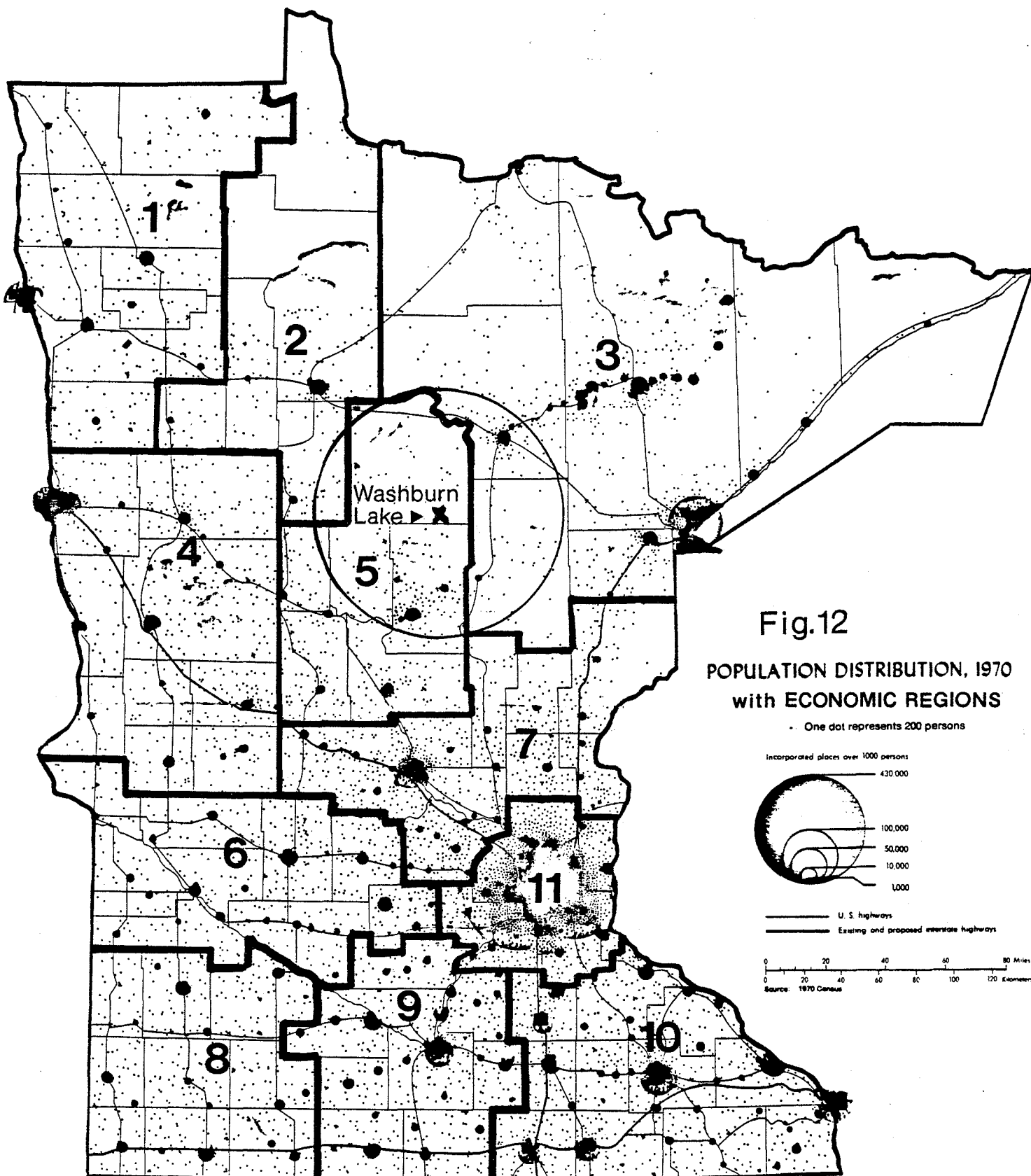


growth in popularity in recent years. The 1974 Minnesota State Comprehensive Outdoor Recreation Plan (SCORP) identified ski touring and hiking as two of the fastest growing recreational activities in the state.

At that time, it was estimated that the number of Minnesotans participating in hiking was 300,000 and it was projected that over 100,000 Minnesotans would be participating in ski touring by 1975. SCORP also emphasized that these activities would continue to grow in popularity in the future.

Current users of the Washburn Lake Solitude unit consist of local residents, people from the Brainerd area, Grand Rapids area, and the Twin Cities Metropolitan area. Most weekday users are local residents, while weekend users consist of skiers from other portions of the state. In 1977, approximately 1,000 people used this trail.

The potential use area for the Washburn Lake Solitude Unit includes Economic Development Regions 3, 5, 7, and 11. Most day users can be expected from the southern portions of Region 3 and the western portion of Region 5. The map in figure 12 shows the hypothetical day use area. This area is defined as the average distance people would travel to use this area without requiring overnight facilities. Weekend users can be expected from Regions 7 and 11 where trails are in short supply.



## Description of the Environment

### Topography

The topography of the forest is level to rolling with an average elevation of 1,300 feet. Most of the area is a glacial moraine with many small depressional areas consisting of marshes and bogs.

Many small lakes are also found throughout the forest adding variety to the terrain.

### Soils

Detailed soil survey information is not presently available for the Land O' Lakes State Forest. Broad soil characteristics show that the area contains deep silty or loamy, well drained light colored soils. Also found are loamy over mixed sandy and loamy well drained light colored soils.

These soils of the Swatera Till Plain, which consist of gently rolling to rolling irregular topography with small areas of steeper slopes, potholes and small bogs, are characteristic of the Land O' Lakes State Forest.

The silt-capped glacial till is grayish-brown calcareous and clay loam. The soils are well to moderately drained on the till plain and well to excessively drained in the mixed till and outwash plain.

Major soil series are: Nordlund, Hill City, Nebish, Beltrami and Marquette. Major problems with these soils are organic matter maintenance and erosion control.

### Climate

Average annual snowfall for the Land O' Lakes State Forest is 56" with an average annual number of days with snowcover of 1" or more of 130 days. The area normally has a snowcover of 6" or more for 60-80 days.

Winter (December, January, February) normal temperature is 11°F. Mean maximum and minimum temperatures for January are 19°F. and -6°F.

Mean annual precipitation is 27", summer (June, July, August) normal temperature is 66°F. with mean maximum and minimum temperatures for July of 80°F. and 56°F.

### Water Resources

Surface water resources in the existing Washburn Lake Solitude Area consist of one large lake, one small lake and numerous marshes. In the new development area, over ten small to medium sized lakes exist in the vicinity of the proposed alignment. Also numerous areas of marsh and swamp dot the area.

These natural lake basins, marshes, and swamps are a very important resource which add to the scenic quality of the area.

### Mineral Resources

Currently, there is no mining activity in the forest. There are several deposits of gravel and a few deposits of peat. No leases exist on minerals or gravel in the forest. Mining should have no effect on the forest in the foreseeable future. Mining activity should be limited to occasional exploration permits and normal gravel pit activity.

No economic concentrations of mineral resources are known to occur within the area of the trail.

### Vegetative Cover

Vegetative cover within the Land O' Lakes State Forest consists of aspen-birch, cedar, bottomland and northern hardwoods, jack pine, norway and white pine, black spruce, balsam fir, and tamarack. Further elaboration of these cover types is found in the Land and Timber Resources section.

### Wildlife

The Land O' Lakes State Forest is home for numerous species of wildlife. White-tailed deer, black bear, moose, porcupine, skunks, and squirrels are but a few animals that may be sighted there. Hawks, bald eagles, grouse, and waterfowl may also be observed on occasion.

Fishermen will find bass, panfish, walleye, and northern pike in lakes throughout the state forest.

### Land and Timber Resource

The Land O' Lakes State Forest encompasses a gross land area of 49,890 acres. Of this acreage, 29,050 acres are state owned. The remaining acreage is made up of county tax forfeit and private lands.

The uplands of the forest support stands of Norway pine, white pine, jack pine, aspen, birch, and northern hardwoods. The lowlands support black spruce, white spruce, balsam fir, northern white cedar, tamarack, and bottomland hardwoods.

There are 22,627 acres of timber producing land in the forest, 4,475 acres of brush, grass, field and offsite aspen, while 1,948 acres are non-productive or non-forest.

Of the timber producing acreage, the Aspen-Birch coertype is the largest consisting of 69% of the total, with bottomland and Northern hardwoods second at thirteen percent. Norway and white pine are third with 8%. The remaining 10% is made up of the cedar, jack pine, black spruce, spruce-balsam, and tamarack cover types.

### Air and Water Quality

The area surrounding the Washburn Lake Solitude Area is largely free of air and water pollution. Industrial air pollution is not a problem in the area although auto emissions are a minor source of local air pollution.

Surface water quality in the area is good and water pollution is not considered a problem.

## Historical and Archaeological Resources

### History of the Forest

The major portion of the pine timber was removed about the period 1880-1890 by several large companies. The Pine Tree Lumber Company, a Weyerhaeuser organization, completed the logging of their holdings about 1907 and removed the last of the virgin stumpage. Magnificent stands of white and Norway pine predominated during the boom logging days and were completely devastated by the loggers. Logging was carried on in the winter with the removal of logs to the landings with sleigh teams and their subsequent transportation by water to the centers of utilization in the mills.

Two drainage areas were utilized for the driving of logs: (1) Lake George through Daggett Brook into Washburn Lake, thence Mule Lake and again down Daggett Brook into Mitchell Lake; and (2) from the headwaters of Roosevelt (in the logging days known as Crooked Lake) into Leavitt Lake, Lawrence Lake, Roosevelt Lake and then down into Mitchell Lake where the logs joined those from the Lake George area and were finally driven into the Mississippi River.

An old railroad grade was constructed about 1890 by the Simpson Logging Company from Cross Lake north to tap the virgin pine stands toward Longville. Several

short spur lines were built from this main line to Dog Lakes, Camp Lake, Hoister, Blind, and others. The rails were taken up in 1911. The old railroad grade is now maintained by the Division of Land & Forestry as a truck trail.

Fires followed the early loggers, and parts of the district were burned over yearly with resulting great losses to reproduction and retardation of forest cover. Fortunately, no serious fires have occurred since the 1930's.

The Land O' Lakes State Forest was established in 1933 by the State Legislature to expediate the work of the Civil Conservation Corps and for fire protection. Additional land was added to the forest in 1963 when 19,000 acres of tax-forfeited land was turned over to the state by Cass County. An additional 2,295 acres of tax-forfeited land in the forest was acquired in 1965.

#### Archaeology

No archaeological sites have been identified within the trail area to date. An archaeological study will be conducted before any earth is removed or cut. The DNR will contact the Minnesota Historical Society to do the investigation.

#### Transportation and Utilities

Access to the Land O' Lakes State Forest is provided by state highway 6 via state highways 200 and 210, and U.S. highway 169. Access to the trail site is provided by County road 48 (see maps in figures 2 and 3, pages 9 and 11).



Presently, one known powerline corridor has been identified within the forest. No telephone or electrical services are presently available or needed in the trail area. Utilities are available, however, at the district forestry office and nearby residences. Water is available at the Washburn Lake Campground.

#### Socio Economic Factors

The Minnesota State Planning Agency (SPA) population projections for Cass County and Economic Development Region 5 show an increase in population up to the year 2000. The data is shown in the table below:

<u>Population Projections</u>		
<u>Year</u>	<u>Cass County</u>	<u>Region 5</u>
1980	19,400	122,500
1985	20,300	127,600
1990	21,200	131,800
1995	22,500	136,200
2000	24,100	139,500

Based on 1970 data, SPA estimates an employed labor force of 4,785 persons in Cass County. Four areas of major employment are: 1) agriculture, forestry and fisheries; 2) construction; 3) wholesale and retail trade and; 4) government.

Tourist travel expenditures during 1974 totaled 33,504,423 in Cass County. These expenditures accounted for 56.5% of gross sales ranking the county third in the state.

### Land Use and Development Trends

#### Cass County General Land Use

(Forty Acre Parcels)

Forested	25,399	Marsh	1,334
Cultivated	1,017	Urban	838
Pasture and Open	4,247	Extractive	0
Water	5,993	Transportation	4

Total 38,832

Current residential, agricultural, commercial or industrial land uses within the county do not effect the Washburn Lake Solitude Area. Most of the area is forested and in public ownership. However, timber harvesting is permitted in the area.

### Facilities in Region V

Economic Region V is a major vacation area for Minnesotans and residents from other states. This region contains three state parks, twelve state forests, part of a national forest, fifteen historic sites, a canoe route and a corridor trail. There are 692 miles of snowmobile trails and 150 miles of ski trails presently available.

Numerous resorts, motels, hotels, and campgrounds can be found throughout the region. Many of these facilities are open year-around to accommodate the needs of most outdoor recreationists. Service facilities are also found throughout the region.

### Facilities in the Forest

The Land O' Lakes State Forest contains many different facilities for the recreationist to enjoy. Thirty miles of marked and groomed snowmobile trails have been developed for the motorized recreationist. In addition, "14 loop" miles of ski touring-hiking trails exist for the non-motorized user.

The Washburn Lake Campground with 30 campsites, seven picnic sites, a boat access, and a swimming beach, has also been developed and maintained within the forest.

Fishing, hunting, and other outdoor activities are all possible in the state forest.

Existing facilities at the Washburn Lake Solitude area presently consist of fourteen miles of two way trail loops, 10-12 feet wide. A parking lot for fifteen cars, a trail shelter, pit toilets and a handpump well have also been provided.

### Management Programs within the Forest

Management of the Land O' Lakes State Forest is based on recommendations outlined in the Washburn Lake District Forest Management Plan. These plans are formulated for each forestry district throughout the state and are based on the state "Timber Management Guide" and other policy manuals. The management program is based on a ten year period, while necessary adjustments are made to fit local conditions.

The management program includes timber, wildlife, soils, water, and recreation. Management of these resources requires a coordinated program which brings about maximum productivity and protection as well as providing other public benefits such as recreation.

Development of the trail within the Washburn Lake Solitude Area and adjacent ski touring-hiking trail will be an integral part of this management program and will not inhibit other forest management practices.

Necessary adjustments will be made in the area to avoid conflicts between other management activities and the trail. Development of the ski touring and hiking trail, however, will not exclude use of administrative vehicles and/or contractors who have been assigned to do work in the area. It will also not exclude automobiles from roads which are normally plowed during the winter.

When timber harvest is recommended in the area, cutting and hauling will try to be scheduled between May 1 and November 1 to avoid conflicts between skiers and contractors. In some instances, such as when swamp conifer types are recommended for harvest, logging operations will have to be performed in the winter to take advantage of frozen ground conditions. In these instances, portions of the trail treadway may have to be closed or rerouted temporarily to permit timber harvest operations to be run efficiently.

Timber sale contracts will be adjusted to insure that trees are not felled blocking the treadway. Provisions will be written so that the trail treadway, if damaged, will be returned to its original condition. Provisions will also be written to insure that slash and other debris are scattered away from the trail.

It should be emphasized at this point, that some forest trails will not always be permanent. As forests change in age, timber harvest will preclude established trail use in some areas. To adjust for these changing conditions, the trail will be rerouted into other areas in the forest. Thus, while trail use will be an established use in state forests, the trail location may not.

All management decisions concerning the area will be made in a manner that insures that the needs of other management activities and recreation are met with the least possible conflict.

#### Potential Concerns and Considerations

The Washburn Lake Solitude Area as presently developed, has been relatively free of conflicts from motorized recreationists. Barriers (both natural and constructed), and the cooperation of area snowmobilers have thus far minimized any user conflicts.

On the western side of the solitude area, the Wood Lake grant-in-aid snowmobile trail runs north-south. There should be no conflict here since this

trail is 1½ miles from the solitude area at the closest point (see map in figure 11).

Proposed expansion could bring about some minor conflicts with local snow-mobile use. However, it is felt that this concern can be worked out and is addressed in more detail in the Proposed Development section.

## Environmental Impact of the Proposed Project

### Impact on the Physical and Biological Environment

Soil Compaction - This will only be a problem in areas of high use. This effect will be minimized through the selection of dry soil locations.

Soil Erosion - This effect will be minimized by route selection, retaining natural ground slope, re-seeding, water bars, corduroy, culverts, and bridges where necessary. No siltation of streams or lakes is expected.

Wildlife - Wildlife will be disturbed during construction, maintenance, and use of the trail. This effect, however, will be minimal. The long run effect may result in more wildlife being harvested adjacent the trail by hunters using the trail for access. This effect may be beneficial in regard to harvesting surplus wildlife where natural predators are absent. In addition, wildlife will benefit from edge effect and re-seeding.

Vegetation - Denudation of vegetation may occur in areas of high use. Re-seeding of the treadway should help minimize this concern. Also firewood will be provided at rest areas so that the site won't be overly "scavenged".

### Impact on Air and Water

The proposed action will only have a minimal effect on air or water quality. Auto emissions and heavy equipment exhaust will be easily assimilated by the

environment. Culverts, corduroy, bridges, and other erosion control techniques will minimize any alteration of surface or ground water quality.

#### Impact on the Historical and Archaeological Resources

No impact on these resources has been identified at this time. Further study by the Minnesota Historical Society may reveal sites which must be avoided during development.

#### Impact on Transportation and Utilities

Expected increases in use of the area will have an insignificant impact on traffic volumes on the highway access routes to the area. Access to the area via county road 48 should not be adversely affected.

No impact on utilities will occur.

#### Impact on Socio Economic Factors

Since all of the land is already in public ownership, no loss from local tax revenue will occur. Beneficial impacts on the local economy will be realized. This will result from increased tourist travel expenditures in the area. Other positive though intangible effects are: 1) The trail will satisfy the immediate area and statewide needs for ski touring-hiking in a manner compatible with the environment and on-going management practices, 2) The trail will provide Minnesotans an opportunity to enjoy, acknowledge and better understand the natural forest environment and management of it.



### Impacts on Land Use

Upgrading and the further development of the trail will not change or affect the land use of the area.

### Impact on Management of the Forest

Normal forest management activities will only be slightly affected by the development and maintenance of this trail. The area and district foresters along with the regional trail coordinator will be delegated further responsibility and jurisdiction by this action. Management of structures, the trail treadway, and the users will be made necessary by this trail.

## APPENDIX

### Trail Alignment Guidelines

#### Preliminary Layout

New trail alignment will be laid out on U.S.G.S. topographic maps and/or air photos prior to on-the-ground inspection. At this time, all scenic areas and points of interest will be identified along with potential problem areas such as bogs, steep slopes, and private land. The basic trail pattern will consist of a large loop or multi-loop system.

#### Field Layout

After the completion of the preliminary layout, DNR personnel and a local skier from an area interest group, will inspect the preliminary route on the ground and make necessary recommendations for change. After the changes are agreed upon, the route will be flagged with plastic ribbon and any alterations will be revised on the map.

As soon as the route has been marked, construction can then begin.

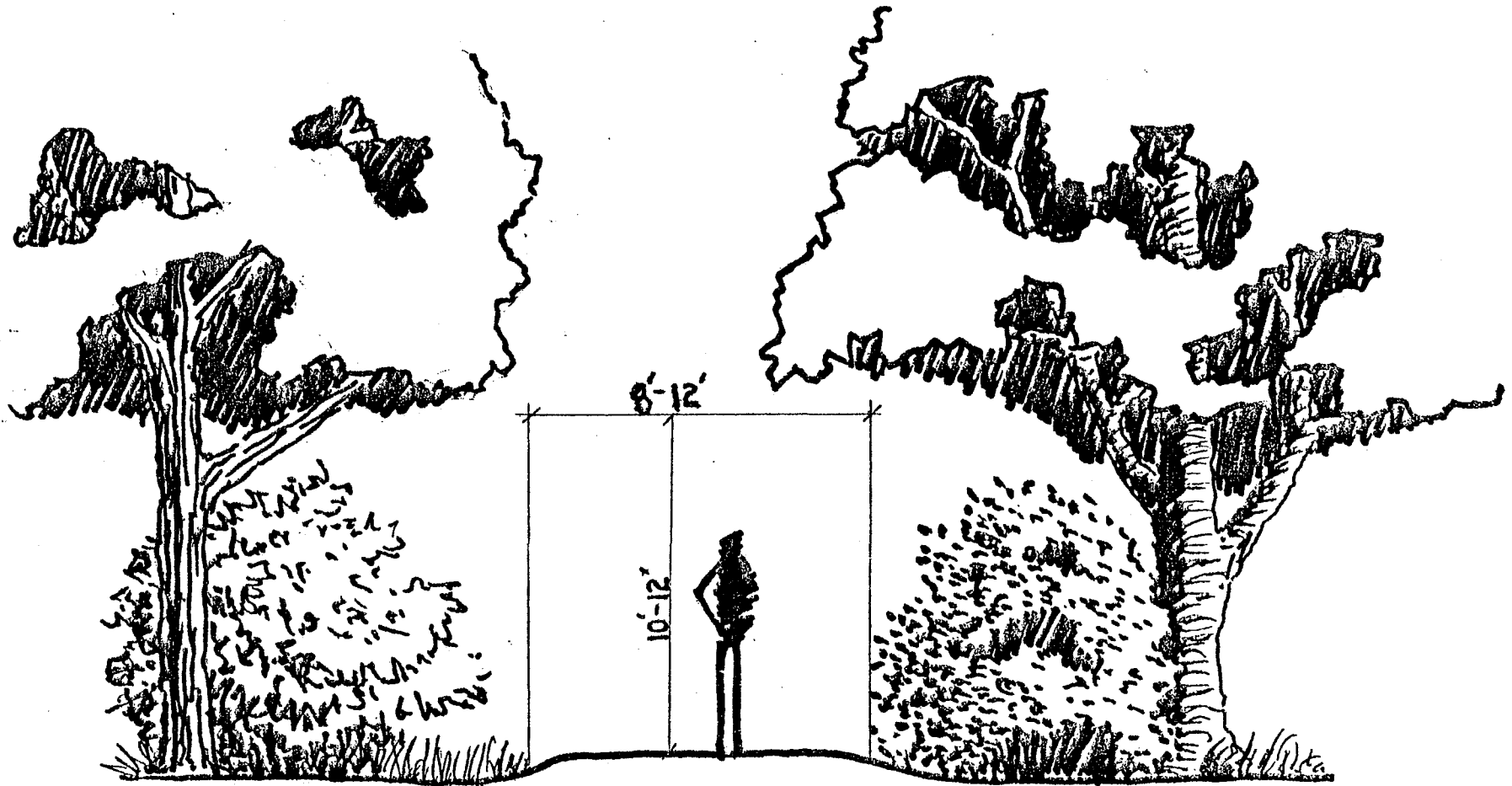
#### Trail Design

The right-of-way for the trail will vary from 8'-12' depending on terrain and the difficulty of the trail (see figure 1a).

Fig. 1a

## Ski Touring Trail Treadways

50



minimum clearances needed  
for ski touring trails

width varies with terrain  
height varies with snow depth

The right-of-way for a novice loop will be narrower (4'-10') than a loop for more advanced skiers (8'-12'). Novice loops will vary from one to five miles in length, while more advanced loops will be constructed up to 20 miles.

Slopes of not more than 15% are recommended for novice trails. Gradients from 25 to 40% can be utilized for more advanced ski loops. A runout at the bottom of hills must be provided to allow skiers to slow down safely.

A minimum width of 6-8 feet is required on hills to allow the skier to either herringbone up or snowplow down.

#### Trail Construction

The first phase in trail construction will be to remove all trees and branches to the desired trail width and height. Cutting techniques could vary according to trail type. For instance, a primitive type trail may only require vegetation to be removed at ground level. For a more developed trail, the treadway will be leveled with a crawler tractor. Trees should be cut at a height of 2-3 feet to allow the crawler a chance to get a good leverage for stump removal.

Trees and brush removed from the right-of-way will be either piled or cut up into manageable lengths and scattered away from the trail. Merchantible wood may be brought out to a landing site and sold.

Stumps and rocks which are removed from the trail should be pushed into piles in designated areas which are inconspicuous from the trail right-of-way.

After brushing and clearing, the trail should be leveled with a slight pitch to allow for proper drainage. Cutting and filling may also be necessary on side-slopes (see figure 2a). All areas where vegetation is removed should be seeded with a wildlife or other seed mixture to prevent erosion. A standard DNR seed mixture based on type of soil in the area will be used.

Wet areas along the trail will require corduroy and/or fill to allow for both summer and winter use (see figure 3a). Where the treadway is elevated by corduroy or fill, culverts may have to be installed to allow for the natural drainage of water.

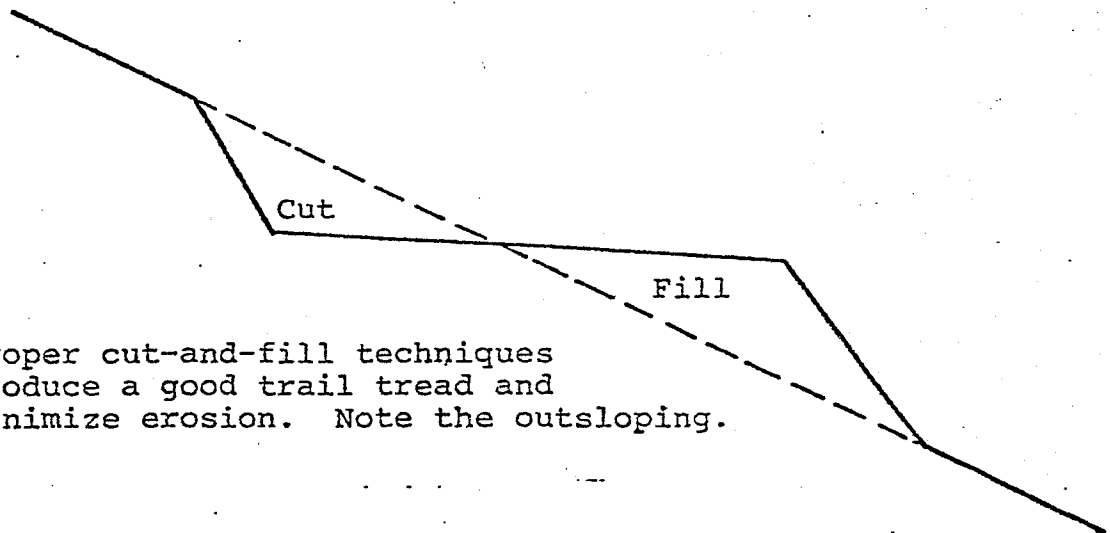
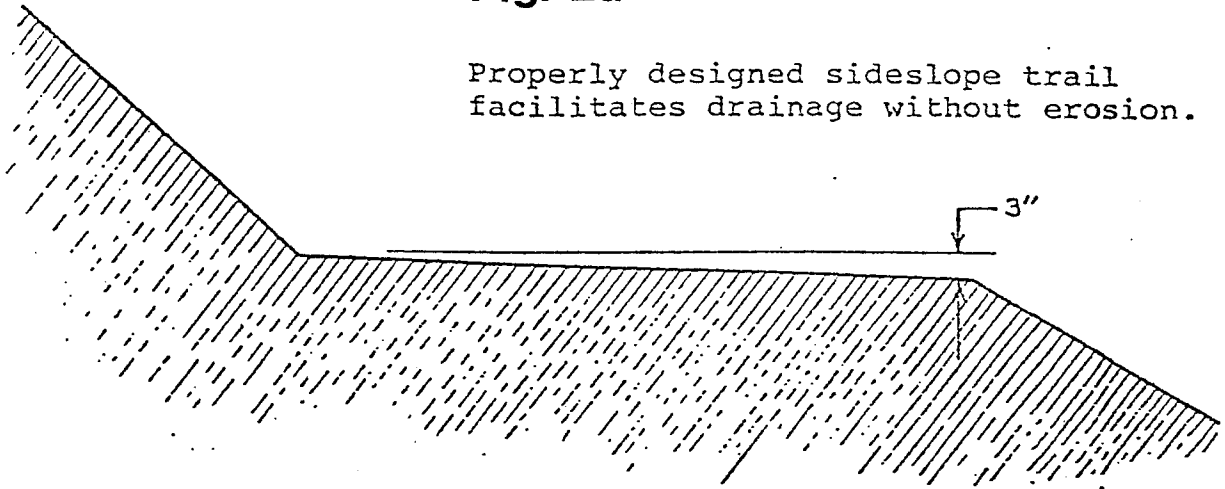
### Barriers

Natural or constructed barriers will be used at trail entrances, road crossings, or other problem areas. Narrowing of trail width to impede vehicular traffic is the most simple, economical way and should be utilized whenever possible.

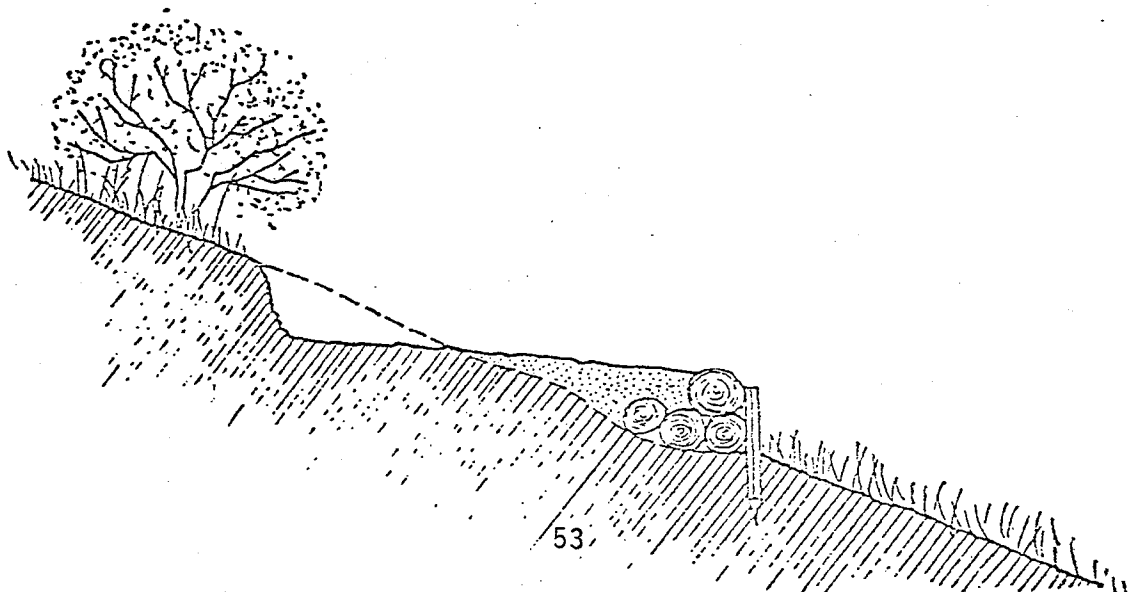
If constructed barriers are necessary, it will be up to the unit manager to decide what type of barrier will best minimize the problems.

**Fig. 2a**

Properly designed sideslope trail facilitates drainage without erosion.

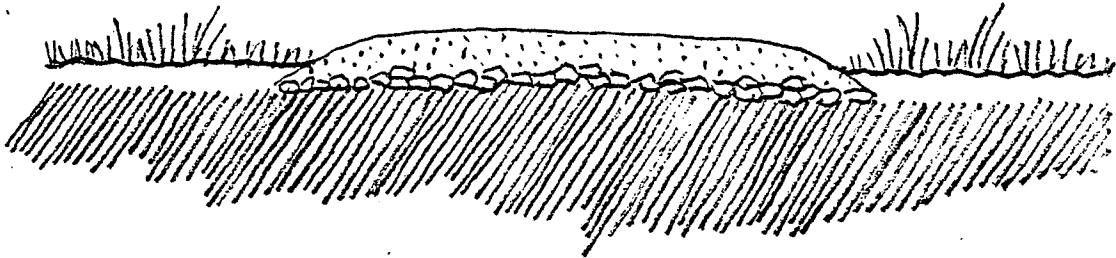


Proper cut-and-fill techniques produce a good trail tread and minimize erosion. Note the outsloping.

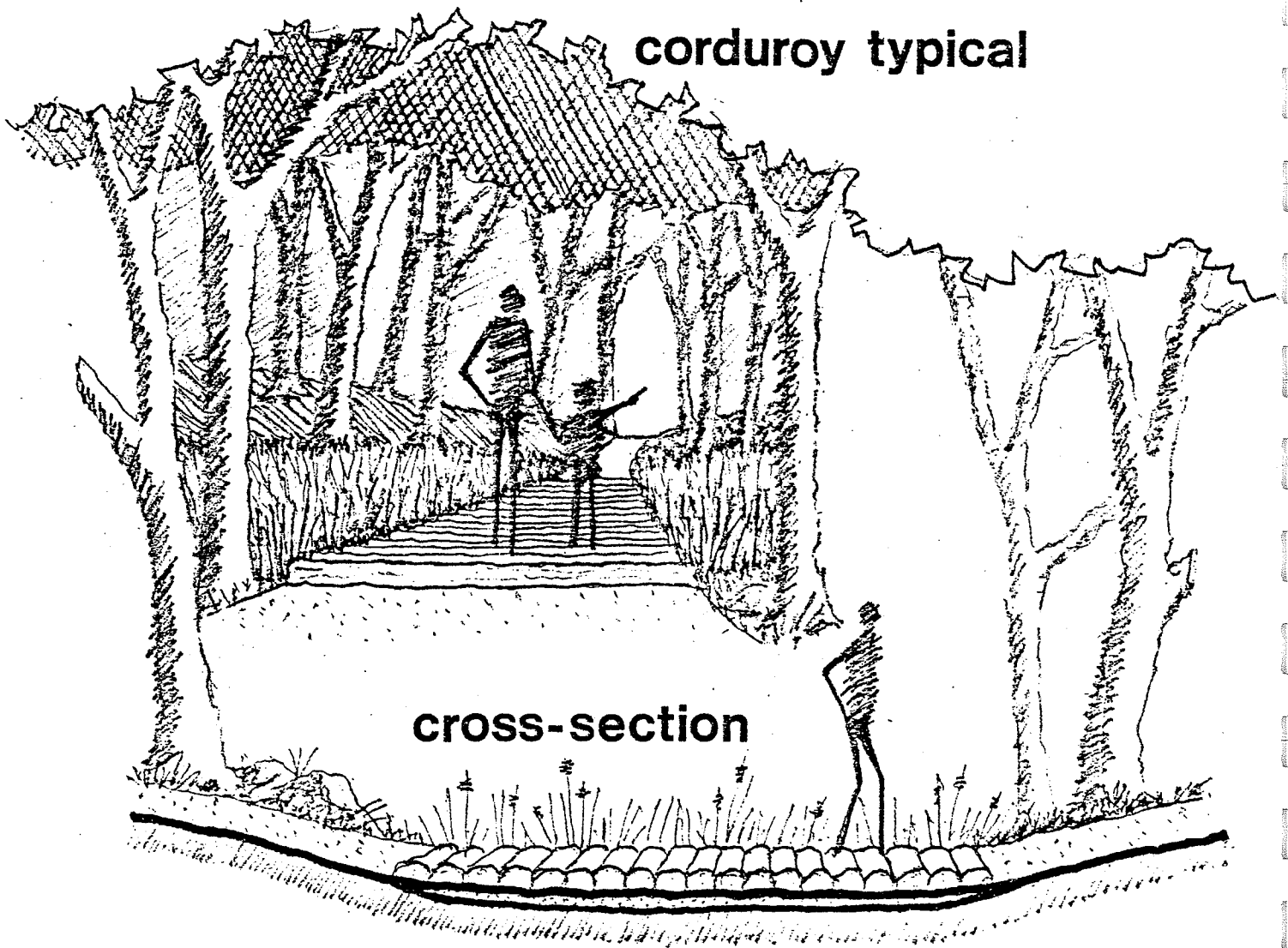


**Fig. 3a**

**elevated tread**



**corduroy typical**



**cross-section**

## BIBLIOGRAPHY

### Facilities In Economic Region V

1. Minnesota State Comprehensive Outdoor Recreation Plan - DNR - Bureau of Environmental Planning and Protection, 1974.

### Climate

2. Climate of Minnesota Part III. "Temperature and its Application"; Donald G. Baker and Joseph H. Strub, Jr., University of Minnesota Agriculture Experiment Station, 1965.
3. "Minnesota Soil Atlas - Brainerd Sheet", University of Minnesota Agriculture Experiment Station, 1969.

### Topography

4. USGS Topographic Maps.

### Vegetative Cover, Wildlife, Timber Resource, History, and Management Program

5. Forest Management Plan for Land O' Lakes State Forest, Gary Anderson, 1977.

### Soils

6. "Minnesota Soil Atlas - Brainerd Sheet", University of Minnesota, Agriculture Experiment Station, 1969.
7. "Soils of Minnesota", H. F. Arneman, University of Minnesota, Agriculture Experiment Station, June 1963.

### Development Specifications

8. "The Ski Touring Trail Planner", Timothy B. Knopp and Jack P. Maloney, 1972.
9. "Trail Construction Guidelines", Ontario Ministry of Natural Resources, 1976.



### Population

10. SPA/CURA Wall Map Series.
11. Population Projections 1970-2000, State Demographer, State Planning Agency.

### Socio Economic

12. Minnesota Socio-Economic Characteristics, State Planning Agency.
13. Minnesota Research Bulletin #06, Department of Economic Development.

### Land Use

14. Pocket Data Book, 1975, State Planning Agency.
15. State of Minnesota Land Use map, MLMIS.

### Draft Plan Review - Public Meeting

A public information meeting was held on July 19, 1978 in Outing, Minnesota to discuss the Washburn Lake Ski Touring and Hiking Trail Management Plan. DNR Project Planners, the Regional Trail Coordinator, Area Staff and District foresters were in attendance along with the Cass County Forester and Trail Coordinator. One citizen attended the meeting and did not express any concerns about the project. Cass County personnel agreed with the project and will be involved in trail alignment.